of such a case except upon the doctrines of localization which are supposed to be classical but which have been so seriously attacked quite recently.

Dr. Spiller said that the patient was more word blind than letter blind. This was the result probably of the method in vogue at the time the man was taught reading by the spelling of words. There have not been as yet any cases of alexia in persons who were taught by the new method of learning, viz.: learning by words first and letters later. When alexia occurs in persons taught reading by this method we shall likely find the recognition of letters more affected than that of words, as letters are acquired later.

Dr. Williams inquired whether the case had been examined in regard to his psychic functions, because one of the main points on which Pierre Marie insisted when he attacked the classical doctrines of aphasia was that the aphasic had lost the functions of performing that which he had learned didactically in general. It would be interesting to know whether the patient had lost any of the slightly complicated operations used in cooking or some similar occupation.

A CASE OF BILATERAL INVOLVEMENT OF THE COCHLEAR AND VESTIBULAR BRANCHES OF THE EIGHTH NERVE

By T. H. Weisenburg, M.D.

A young man of eighteen had specific iritis which was treated by mercurial inunctions. About two years after that his right ear began to buzz and hearing became very much diminished to be followed very soon by a similar condition in the left ear. Since this time hearing in both ears has become very much diminished, especially so in the right side. Since the beginning of his trouble he has complained of various oral noises, such as escape of steam, and whistling, buzzing and cracking sounds. This condition persisted for three years and in the meantime he never had dizziness or vertigo and did not stagger.

One night he went to bed and on rising in the morning the buzzing in his ear constantly increased and hearing was almost totally lost and then he began to stagger, especially to the left, and complained of dizziness. Since that time he has felt as if his head was constantly moving around or that objects in front of him were moving in the same direction. This dizziness was not influenced by change of position with the exception that sudden movement would increase it. He has not had headache, nausea, vomiting or disturbance of vision and has never had convulsions.

Examination shows besides the evidence of the old iritis an almost total deafness on both sides. There is on lateral deviation of the eyeballs nystagmoid movements which are equally marked to either side. Power in both upper and lower limbs normal. There is no ataxia with either eyes open or shut and the reflexes are a little prompt. His gait is typically cerebellar. There is no choked disc.

Diagnosis.—The patient evidently had specific disease and a bilateral involvement of both eighth nerves in so far as the cochlear distribution is concerned for he had for three years a gradual increase in deafness with noises in his ears. Suddenly the deafness became total, the noises increased and he first began to have vertigo with typical cerebellar staggering. Evidently there must have been an extension of the process either to the vestibular division of both eighth nerves or into the semicircular canals. The differential diagnosis between these two conditions is very difficult and it is a question whether it can be made. Should there be, however, an involvement of the semi-circular canals there should be besides the vertigo and staggering some general disturbances, such as vomiting and also in such case there would hardly have been the history that is present in this case, *i. e.,* there would have been an involvement of hearing and equilibration at the same time or very soon after. It is possible then that we have here first of all involvement of the cochlear branch with an extension of the process to the vestibular but in such case it would be difficult to reconcile the fact that there was a sudden extension of the neuritis to the vestibular branch.

Dr. Donaldson stated that the remarks to which Dr. Weisenburg alluded were based on observations made by William James, on a series of deaf mutes, in most of whom destruction of the semi-circular canals had probably occurred. In these cases, three sets of symptoms were observed; first, the inability to judge direction when swimming under water; second, almost complete absence of susceptibility to sea-sickness; and third, freedom from dizziness after rotation.

Dr. Mills asked whether Dr. Weisenburg thought the lesions were in the auditory canal.

Dr. Weisenburg said he thought the man had an involvement of the semi-circular canals.

We have well studied and recorded cases of cochlear and vestibular disease separate and conjoined and separate becoming conjoined. Dr. Mills believed that all these conditions occur as peripheral affections. In his book he has a chapter on diseases of the vestibular nerve, separately considered, giving the clinical phenomena there for the affection of this nerve. In other words, we may have disturbance of equilibrium from vestibular disease entirely independent of disturbance of hearing, from cochlear disease, or the reverse. Uusually affections of both nerves occur at the same time. Sometimes these cases are due to grippe, sometimes to syphilis, occasionally to labyrinthian hemorrhage. Dr. Mills thought Dr. Weisenburg's case was one in which the cochlear nerve was first affected and later the nerve became affected.

The localization of disease in the cerebello-pontile angle has now become a matter of comparative ease in most cases, though we have an occasional case in which labyrinthine disease needs to be very fully considered before making this diagnosis. There was such a case at the University Hospital a year or so ago. Operation was declined at the time. The event proved that it was best not to have operated. The involvement of the facial or fifth is not present in this case of Dr. Weisenburg's. Dr. Mills stated that none of the symptoms presented could be regarded as absolutely cerebellar. Of course the involvement of the seventh or fifth or both, and cerebellar symptoms would separate the cerebello-pontile case from one like the present.

Dr. Wiliams thought it a very interesting case. Given that it is a luetic process, which he understood Dr. Weisenburg to affirm, it seems very strange that such a process should involve the endolymph of the cochlea for four years without spreading to the endolymph of the semicircular canals. One might, therefore, readily invoke a pathogenesis of radicular cause. In that case it is very strange that after four years, supposing it was a meningitis process, the inflammation should not have extended to the vestibular portion of the eighth nerve. Dr. Williams thought this point could be settled by lumbar puncture. It is certainly not a cerebellar affection nor one of the nucleus of Deiters because no symptom referable to the nucleus of Deiters or the cerebellum such as hypotonia or asynergia of other parts have manifested themselves.

Dr. Weisenburg stated in closing that he was not at all certain that the differential diagnosis between an involvement of the vestibular branch and the semi-circular canals could be made and his object in presenting this case was to call the attention of the society to such a possibility.

THE PATHOGENESIS OF TABES DORSALIS

By Tom A. Williams, M.D., of Washington, D. C.

Controversy as to the pathogeny of tabes has not ceased since Duchenne surmised its sympathetic origin, and Charcot later supposed it to be a posterior column dystrophy, similar to that of Friedreich's ataxia. His great authority prevented due attention to the researches of Obersteiner and his followers, until the memoir of Redlich appeared in 1897. The discoveries as to the syphilitic etiology of tabes caused greater attention to the work of Nageotte, who in 1894 had indicated the constancy of lesions on the radicular nerve at the point where it receives its meningeal sheaths. These lesions correspond to one or other stage of the granulomatous process, varying as they do from simple round cell infiltration to granuloma, and even breaking down with formation of cavities. They are due to primary chronic meningitis, evidenced by the lymphocytosis found by spinal puncture during life, and postmortem when skillfully looked for; although the tendency of the process to resolution and fibrous-tissue formation leaves only a slight thickening in the membranes, already fibrous by nature.

The changes in the cord are consecutive to this. That this is so, is proved by similar changes of the posterior column after disease or experimental section of individual roots, and by the changes occurring after their mechanical affection of the radicular nerves due to the increased intro-spinal pressure caused by the growth of cerebral tumors.

The noxa falls upon the root fasciculi very disparately, and this corresponds to the disparate nature of the sensory troubles, which do not preponderate so much as formerly supposed upon the fibers which subserve the sense of attitudes and of muscular movement; for it is now definitely shown that cutaneous sensations are always involved more or less, though probably later in the disease.

The superficial lightning pains described by Gowers and the psychometric analysis of the sensibility of tabetics by Vaschide are an index of this; while the researches of Head enable us to explain the modifications in terms of deep, protopathic, and epicritic sensibility. The fibers subserving the life of internal relation may differ morphologically from those subserving external relationship, as contended by Pierre Bonnier with particular reference to the eighth nerve, the principal posterior root, where the cochlear portion, whose function concerns the outside world is affected only rarely, while the vestibular portion is concerned with intrinsic relationships and is involved very commonly indeed in the tabetic process.

However this may be, it is certain that impaired sense of attitudes is always accompanied by impairment of the deep pain senses of perception of the vibrations of the tuning fork by the bones; and as these functions are conveyed in the same peripheral path, while they are separated within the cord, clinical evidence is in entire harmony with the pathogenetic theory advanced by Nageotte. The data furnished by the optic nerve